

17 September 1959

Dear Dick:

PROGRESS REPORT #1

Prior to leaving on my vacation, I want to give you this first progress report in letter form, incorporating certain recommendations for action to be taken by your people.

We are considering Sept. 1st the official start date, and I would say that we are going along very well. [REDACTED] arrived September 10th and we have been keeping him very busy, so that at this time he is able to return for a few days [REDACTED] where I guess he will see you. 25X1A9a

25X1C4c

I am sure that by now Colonel Geary and [REDACTED] have reported the results of their trip to you. I spent two days with them, going up to the [REDACTED] on the second day. I think we had a very fruitful discussion. I will sum up some of the apparent results of their trip, and later approvals which we have had from John Parangosky on the actions which we are now taking. 25X1A

25X1A

I am afraid that this report may be rather disjointed, but I will put down all the important thoughts that occur to me on the project.

1. Cross Section Tests. The full scale model is coming along very rapidly, and we were aiming at a completion date of 12 October when we discovered that there was no hope of putting the model on the [REDACTED] pole. Even if there were, it was very apparent when we visited the place that we would be taking extreme liberties with over-all security if we put the big thing at the [REDACTED] at all. Currently, we are changing the date of the full scale test model completion to the week of 16 November, expecting to haul it to the [REDACTED] at that time and mount it on a new pole.

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When we visited the [REDACTED] (Frank was with us, as well as [REDACTED]), I was totally unimpressed with the area that had been proposed for installing the new range which had been drawn up some time before [REDACTED]. There were numerous ditches, ten-foot piles of gravel, depressions, and other impediments, which did not improve conditions over those at the [REDACTED]. In talking to the group, I proposed that we swing the whole range out onto the west end of the lake, so that the pole would be a few hundred yards from the west shore, but with an absolutely level shot from a new building on the southwest corner that could be obtained and provide ideal conditions. The problem of water on the lake affecting the pole operation seems to me to be

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extremely minor, compared to the basic disadvantages of the originally proposed [REDACTED] installation. A new building would have to be built to house the evaluation gear but, under the other plan, where an existing warehouse would be used, it would still be necessary to build a new building; so in the end I think we all agreed to the new proposal for the pole location.

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Because the pole installation will be the determining factor as to when we can test a full scale model, it is of utmost urgency that [REDACTED] arrive here and make the proper arrangements with [REDACTED] for the construction of the building and the cement installation to take the post. The cement should be in place by 2 November, in order to give proper curing time for installing the large piston. We have had a verbal go-ahead from John to proceed with the design and subcontracting of the piston, as well as the construction of the rotating head in our own shops at once.

We think we can make an operational date some time the week of 16 November. While the large model will be delayed a month, we will take this opportunity to equip the chines on one side of the model with AR treatment, so that we can start right off measuring its effect.

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In the meantime, at the end of this month, we will send to the [REDACTED] 1/8 scale model. During the week of 12 October we will send to [REDACTED] a full scale 10 ft. long fuselage section with various chine arrangements.

Toward the end of October, I hope that we can send a full scale nacelle with various inlets [REDACTED].

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About 2 November, I would think [REDACTED] should start moving their equipment to the [REDACTED]. Obviously, this is a very tight schedule, and totally dependent on rapid action on the part of [REDACTED].

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I have given a great deal of consideration to the problem of whether or not we are realistic in looking at cold afterburners, and I think I have mentioned to you in the past that I would like to look at an F-104 with radar in both the afterburning and non-afterburning configuration. I have a different proposal to get some answers on this subject. The new large pole will take an F-94C, which has one of the world's biggest, noisiest afterburners, and which can readily be changed in its fuel mixture

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setting to vary from no external flame to one about 25 feet long, with an installed thrust afterburning of between 8,000 and 9,000 lbs. It should be fairly straightforward to get an airplane from the Air Force, put it on the pole, and run the engine remotely, as we have done in certain wind tunnel tests. We could then evaluate whether or not we have an actual ionized cone which favorably affects radar cross section in actual flight. What do you think of this?

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The [REDACTED] people are here for their second visit. We are working with them on materials, primarily for the vertical fin, at this time, but generally for any high temperature plastics they might have. We have found that they have no different or better materials than those we have been working with, and the material aspect is a very considerable concern to me at the present time. We are providing the tooling to [REDACTED] along with a purchase order, to obtain the best vertical fin design we can arrive at for an early test. 25X1A5a1

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In an effort to get the most skilled personnel on the problem that we can obtain, I have asked our [REDACTED] management, who have a very considerable radar experience, to provide us with from 4 to 6 of their most competent engineers for a period of 6 months to a year, on what you might call a lease basis, to evaluate the over-all AR problem in all its aspects. There may be one or two other gentlemen who might have something to contribute in this field whom we may wish to hire on a consulting basis in the near future. As soon as we can firm up on names, which, of course, must be prior to any discussion with them, I would like to send them in for a clearance as rapidly as possible.

2. Facilities. Because of our increased engineering size, we are enlarging our engineering area in our current location. We have already moved the U-2 engineering section to a new building, away from this area but still on the airport. We will shortly move all U-2 construction and repair activity to a new hangar, which will gradually be adapted to feed parts into our main assembly hangar here where we originally built the U-2. We have made the proper security arrangements prior to making these moves, and have no problems in this area. In our new engineering facility, we are providing for a commo center, as you requested.

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During our visit to the [REDACTED] we found things in good condition. We were all particularly pleased with the state of the runway and the lake itself. I originally told [REDACTED] that I didn't think it necessary to extend the present runway, but that it could probably be smoothed over where it goes under the lake and we would have ample take-off and landing room. After further discussions with [REDACTED] and consideration of the precise timing required for certain missions, it seems that it might be desirable to add 3,000 ft. to the existing runway. I am not sure that it is necessary to reinforce the existing runway. I think it might be worthwhile, before doing that, to see how it would stand up under operations. It seemed very hard to all of us on the scene, even though the temperature was over 90°F.

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We are doing our utmost on our landing gear design to get footprint pressures lower than many of the century series fighters, but, at best, these values will still be high. When we consider full load, hot day take-offs at the [REDACTED] with temperatures of 100°F, we encounter rolling speeds of between 230 and 250 mph. These are about the speeds of the F-104, F-105, and F-100 in their Tactical Air Command versions.

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We will need almost immediate approval for collecting shop equipment to re-equip the middle hangar for making modifications to the full scale model. Power and air systems will have to be re-established, but we should not cut any hangar doors for some time. Wind tunnel tests may change the vertical tail configuration and I would hate to cut fin slots in the wrong place. We can pull the full scale model in there by removing the verticals.

3. Design Engineering. Design engineering is being put in almost entirely on the various AR models. Design work, however, for a full scale fuel system test rig is going forward, so that the problems of refueling, fuel feed at high angles of attack, etc., can be studied. We are running into some impossible design conditions that we have never gotten before, and that is that the airplane at landing weight has an angle of climb of 90°. I think we may have to placard such a maneuver, as it confuses the fuel feeding problem as well as the pilot. We are making good progress on the landing gear, basic wing and fuselage structure.

Wind tunnel models for subsonic tests will be put into the tunnel area in October, and I think it in order to start negotiations for

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time in the following high speed tunnels:

High Speed Tests at Ames

Tunnel Required	Dates Required
8 x 7	Dec. 1 - 18, 1959
9 x 7	Dec. 28, 1959 - Jan. 8, 1960
11 x 11	Jan. 11 - 22, 1960

Inlet Tests at Ames

8 x 7	Feb. 1 - 19, 1960
9 x 7	Feb. 22 - Mar. 4, 1960
11 x 11	Mar. 7 - 11, 1960

Heat Transfer Model

A review of available tunnels is being made.

We have contacted the operating personnel of certain of the tunnels and believe the dates requested are available. We will, of course, have to have your help with the NASA to formalize these plans and to clear people like [REDACTED] so that we can talk to him on the programs.

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4. Manufacturing. The manufacturing group is working a 6-day week, plus overtime, to complete the various models. A few pictures of the model are enclosed in Dick's copy of this progress report.

5. Financial Status. We have at this point no financial reports of note. In connection with the construction and the subcontracting aspects of the large pole, I told John that a horseback guess, including installation by [REDACTED] was in the \$150,000 to \$200,000 category. I don't think we can get a firm figure on this until [REDACTED] In the meantime, we are proceeding to get the material and to draw and build the post and its accessories.

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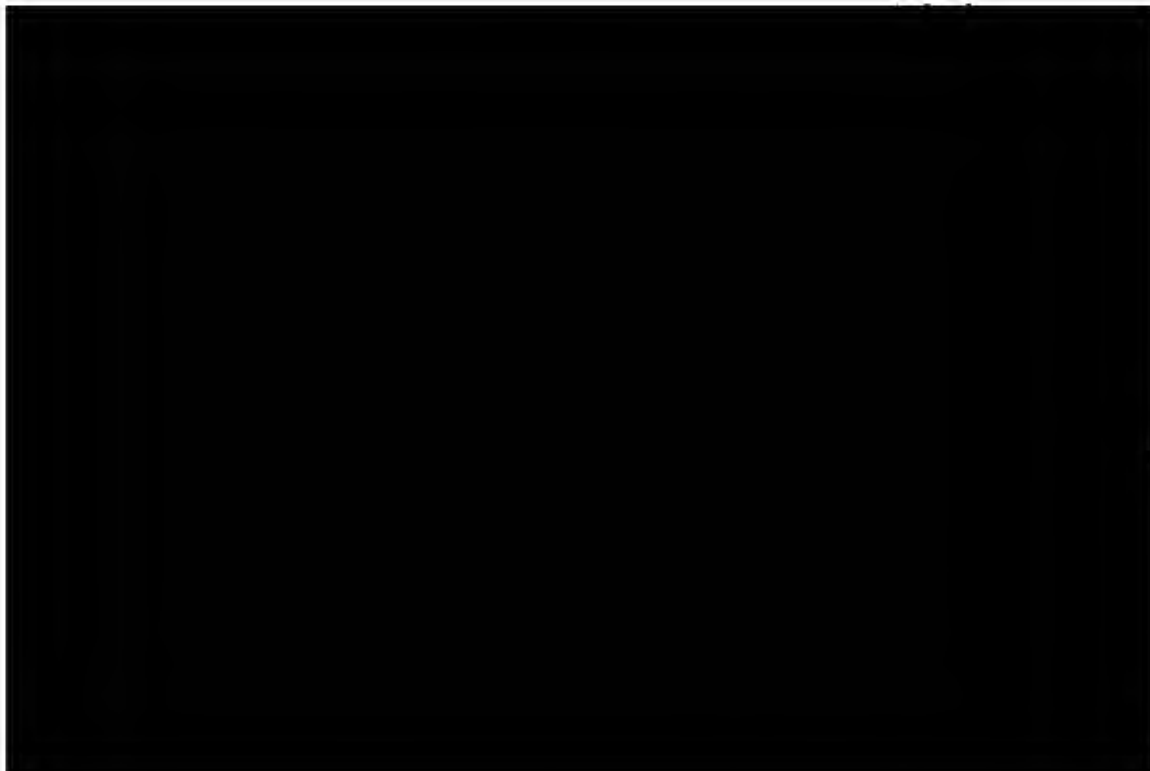
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I think this just about completes a very lengthy discussion covering three extremely busy weeks. I will now take off for the Hawaiian Islands and study the aerodynamics of surfboards and the big canoe with outriggers as it comes in past Diamond Head.

Regards.

cc: John
Gene ✓

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